

Emotional dysregulation in mothers of children with attention deficit and hyperactivity disorder

Emotional disregulation and attention deficit and hyperactivity disorder

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Abstract

Aim: Emotion dysregulation (ED) is frequently observed in attention deficit and hyperactivity disorder (ADHD). People suffering from ADHD have difficulty with ED, and the nature of the relationship between the two is an important area of research. In this study, we aimed to investigate ED in mothers of children with ADHD.

Material and Methods: Seventy-two children (n = 49 male, n = 23 female) with a diagnosis of ADHD and their mothers participated in the study. Clinical Interview was used for the the Diagnostic and Statistical Manual of Mental Disorders (fourth edition (DSM-IV) (SCID-II), Child Anxiety Sensitivity Index (CASI)). Mothers completed the McMaster Family Assessment Device (FAD) and Conners' Parent Rating Scale (CPRS-48) as applied to individuals.

Results: The distribution of SCID-II diagnoses in mothers was as follows: without diagnosis 73.6 %, avoidant 8.3%, histrionic 5.6%, obsessive-compulsive 5.6%, passive-aggressive 2.8%, dependent 1.4%, self-defeating 2.8%. CASI scale points were higher in children with SCID II (± 31.73 , ± 6.98 vs 27.84 , ± 7.19 , $p = .037$). There was no difference in the subscales of Conners and McMaster scales according to the presence or absence of SCID-II diagnoses.

Discussion: The relationship of ED with ADHD and personality disorders has been frequently noted. However, a number of questions remain unaddressed about the association between ADHD and ED.

Keywords

Emotion dysregulation; Attention deficit; Parenting; Anxiety; Stress

DOI: 10.4328/ACAM.20356 Received: 2020-09-08 Accepted: 2020-11-07 Published Online: 2020-11-10 Printed: 2021-05-15 Ann Clin Anal Med 2021;12(Suppl 1): S72-76
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Introduction

Emotion regulation (ED) refers to the way emotions regulate other systems, such as thoughts, physiological responses, and behavior (regulated by emotions) as well as how emotions themselves are organized (regulation of emotions) [1]. People suffering from attention deficit and hyperactivity disorder (ADHD) often have difficulty with ED, and the nature of the relationship between the two is an important area of research. The number of studies investigating ED and how the mothers of children with ADHD cope with this situation is limited. Information obtained from the studies showed that ED is frequently observed in ADHD, has an effect on functioning, and is important in the course of the disorder [2]. ED difficulties in people with ADHD include difficulties in regulating stimulated emotions and difficulties in inducing positive and acceptable affective states [3]. Genetic heritage plays an important role in the etiology of ADHD, but a multitude of contributing factors cause heterogeneity in the etiology of ADHD [4]. The importance of parental attitudes and parental psychopathology is emphasized in studies on children with ADHD and their families [5]. Studies on parents of children with ADHD have also shown higher rates of parental psychopathology, as well as conflicts in parent-child relationships [5]. Since families also have poor problem-solving skills, some studies suggest that special interventions, starting as early as possible with parents, are needed to help children with ADHD develop adaptive skills. Padila R and Parsons MH (2019) ran a six-week, six-step parenting program (SsPP) for eight low-income, single-parent families at two community health centers. In their study, the researchers reported that six out of eight (75%) participating parents reported an improvement in their children's symptoms. These studies emphasize the importance of understanding what ADHD is, demanding ADHD diagnostics for their children to improve their emotional life or social status, and special education to learn how to manage a child in enabling parents' adaptation to an effective parenting role. Recently, ADHD has become an issue that concerns not only the child individually, but the entire family structure [6]. In addition, parents with ADHD symptoms have been reported to have difficulty in responding to their child's negative feelings [7]. In particular, the presence of parent's own emotional dysregulation makes life difficult for both parents and children [7]. In light of these data, we aimed to investigate the presence of ED in mothers of children with ADHD and the correlation between ADHD in children and ED in their mothers. Emotion dysregulation is a dimensional entity, not a categorical diagnosis, and can also be seen in other psychopathologies such as bipolar disorder, borderline personality disorder, and substance use disorders. Therefore, The Structural Clinical Interview from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (SCID-II) was applied to all mothers of children diagnosed with ADHD in a manner covering psychiatric diagnosis. We hypothesized the existence of a link between ADHD and higher levels of maternal ED.

Material and Methods

Participants

The sample consisted of 72 children ($n = 49$ male, $n = 23$

female) with a diagnosis of ADHD aged 6-17 years old who had been referred to the University of Health Science, Haydarpaşa Numune Training and Research Hospital, Department of Child and Adolescent Psychiatry, Istanbul, Turkey. The study included all consecutive referrals that met the following criteria: a diagnosis of ADHD according to DSM-V, the mother's informed consent, and the child's consent for inclusion in the study. The study protocol was reviewed and approved by the Local Ethics Committee of Haydarpaşa Numune Training and Research Hospital with protocol number 12.09.2018 version 1. The exclusion criteria for children were the presence of a chronic medical illness, any sensory-motor disability, or neurological disorder, and the diagnosis of autistic spectrum disorder or other developmental disorders. The exclusion criteria for mothers were the presence of a psychiatric disorder due to her general medical condition, significant cognitive deficiencies preventing understanding and participation in evaluations, age younger than 18 years, and inability to read and understand study procedures.

Procedure

The study protocol was reviewed and approved by the institutional review board of the University of Health Science, Haydarpaşa Numune Training and Research Hospital. Mothers gave written consent for participation in the study. The diagnosis of children with ADHD was made according to a structured clinical interview based on DSM-V diagnostic criteria, which included questions about each symptom of ADHD, symptom onset and duration, and related impairment academic, family, social, and psychiatric history. All patients were drug-naïve. Patients completed the Child Anxiety Sensitivity Index (CASI), while mothers completed the McMaster Family Assessment Device (FAD) and Conner's Parent Rating Scale (CPRS-48) for all patients. Mothers were evaluated using a structured clinical interview for DSM-IV axis-II disorders according to the DSM-IV (SCID II) [8].

The CASI is a self-report scale developed to assess anxiety sensitivity in children [9]. It consists of 18 items that measure the degree of anxiety caused by negative consequences in school-aged children (6-17 years of age). The index has a three-point rating for each item as none (1), some (2), or a lot (3), with the total score ranging from 18 to 54. A Turkish validity and reliability study was performed for the CASI [10].

The FAD was developed in 1983 to evaluate different functions and problem areas of the family [11] and has subsequently been adapted into Turkish [12]. A general-functioning subscale score of two or above indicates non-healthy family functioning; a higher score indicates more problematic family functioning.

The Conners' Parent Rating Scale (CPRS-48) is one of the most commonly used behavioral scales for children with ADHD. The Turkish adaptation and validation of the CPRS-48 was performed by Dereboy, Şenol, Şener, and Dereboy [13]. In this study, a 28-item short form was used from which three subscales (conduct problems, impulsive/hyperactive behavior, learning problems) and a total score were obtained. Higher scores indicate greater problems in the related subscale [14].

The Conners' Teacher Rating Scale (CTRS) exists in both long (38 items) and short (28 items) versions. In this study, the 28-item short form (CTRS-28) was used. A Turkish validity and

reliability study of the CTRS was performed by Dereboy et al. [13].

The Difficulties in Emotion Regulation Scale (DERS) was used to evaluate maternal emotional dysregulation. This is a five-point Likert-type self-report scale, which contains 36 items along six dimensions [15]: “Awareness” evaluates the state of being unaware of emotional responses. “Clarity” is related to the lack of emotional clarity. “Non-acceptance” evaluates acceptance of negative emotions. “Strategies” refers to the degree of access to effective emotion regulation strategies. “Impulse” evaluates the difficulty in controlling impulsive behaviors provoked by negative emotions. “Goals” refers to disengagement from goal-directed behavior while experiencing negative emotions. Higher scores indicate greater difficulties in emotion regulation. The scale was adapted to Turkish by Rugancı, and the Cronbach coefficient of the scale was 0.94 [16].

Statistical analysis

The IBM SPSS Statistics 22 for statistical analysis (SPSS IBM, Turkey) program was used when evaluating the findings obtained in this study. The suitability of the parameters to a normal distribution was evaluated using the Shapiro-Wilks test. Descriptive statistical measurements (mean, standard deviation, frequency) and quantitative data were compared using the Student's t-test to compare normally distributed parameters. Pearson's correlation analysis was used to investigate the relationships between the parameters of the normal distribution. The significance was evaluated at $p < .05$.

Results

The study sample consisted of 72 (79.2% male, 20.8% female) children with ADHD and their mothers. The mean age of the children was 9.17 ± 2.1 (range 6-14) years. The distribution of SCID-II diagnoses was as follows: without diagnosis 73.6%, avoidant 8.3%, histrionic 5.6%, obsessive-compulsive 5.6%, passive-aggressive 2.8%, dependent 1.4%, self-defeating 2.8%. CASI scale points were higher in children with an SCID-II diagnosis (31.73 ± 6.98 vs. 27.84 ± 7.19 , $p = .037$). There was no difference in subscales of Conners' and FAD scales in the presence or absence of SCID-II diagnoses. A comparison of scales with and without SCID-II diagnoses is shown in Table 1. When we evaluated correlations between the mothers' total emotion-dysregulation points and other scales, we found positive correlations in three subscales of the FAD: affective responsiveness, affective involvement, and behavioral control (Table 2). We evaluated correlations with mother's subscales of the DERS and subscales of the FAD. Some correlations were statistically significant (Table 3).

Discussion

The relationship between ED and ADHD and personality disorders has become the object of increased study. Although ED has been typically associated with borderline personality disorder, ED also has complicated connections with impulsivity. Not only does ED underlie impulsive behaviors, but impulsive behaviors themselves may also contribute to ED when engaging in impulsive behaviors is used as an emotion-regulation strategy [17]. Since impulsivity has been established as a clinical part of ADHD, there may also be connections between

Table 1. Comparison of scale scores between mothers with and without SCID II diagnosis

| | SCIDII diagnosis(-) Mean \pm SS | SCIDII diagnosis(+) Mean \pm SS | p |
|--------------------------------------|---|---|--------|
| Conners' Scale | | | |
| Conduct Problems Score | 13.86 \pm 10.03 | 16.36 \pm 8.98 | 0.318 |
| Impulsive/hyperactive Behavior Score | 7.68 \pm 4.02 | 7.77 \pm 2.64 | 0.908 |
| Learning Problems Score | 8.84 \pm 3.45 | 10.41 \pm 2.74 | 0.063 |
| Total | 53.04 \pm 22.67 | 62.09 \pm 19.83 | 0.110 |
| FAD | | | |
| Problem Solving | 10.4 \pm 3.41 | 10.18 \pm 3.45 | 0.804 |
| Communication | 15.66 \pm 3.77 | 16.18 \pm 3.62 | 0.586 |
| Roles | 21.72 \pm 5.1 | 23.91 \pm 4.14 | 0.081 |
| Affective Responsiveness | 9.74 \pm 3.54 | 10.27 \pm 3.79 | 0.567 |
| Affective Involvement | 15.4 \pm 3.45 | 16.27 \pm 3.28 | 0.319 |
| Behavioral Control | 17.96 \pm 3.39 | 17.64 \pm 3.22 | 0.706 |
| General Functioning | 19.64 \pm 5.51 | 20.86 \pm 4.79 | 0.370 |
| DERS | | | |
| Total | 79.66 \pm 19.52 | 100.45 \pm 24.64 | 0.000* |
| Awareness | 17.1 \pm 4.06 | 18.00 \pm 4.33 | 0.399 |
| Clarity | 12.48 \pm 2.11 | 14.45 \pm 3.73 | 0.028* |
| Nonacceptance | 10.24 \pm 4.15 | 14.77 \pm 5.33 | 0.000* |
| Strategy | 15.14 \pm 4.49 | 20.5 \pm 7.68 | 0.005* |
| Impulse | 11.64 \pm 4.45 | 15.68 \pm 6.11 | 0.002* |
| Goal | 12.58 \pm 3.67 | 15.86 \pm 3.72 | 0.001* |

Student t test, * $p < 0.05$, Conners Scale: Conners' teacher and parent rating scales, FAD: The McMaster Family Assessment Device, DERS: Difficulties in Emotion Regulation Scale of mothers

Table 2. Correlations between Difficulties in Emotion Regulation Scale of Mothers and Child Anxiety Sensitivity Index, Conners and The McMaster Family Assessment Device

| | DERS total r | p |
|--------------------------------------|-----------------|--------|
| CASI | 0.109 | 0.363 |
| Conners' Scale | | |
| Conduct Problems Score | 0.138 | 0.249 |
| Impulsive/Hyperactive Behavior Score | 0.174 | 0.145 |
| Learning Problems Score | 0.211 | 0.075 |
| Total | 0.193 | 0.104 |
| Mc Master (FAD) | | |
| Problem Solving | -0.207 | 0.081 |
| Communication | -0.016 | 0.893 |
| Roles | 0.133 | 0.265 |
| Affective Responsiveness | 0.256 | 0.030* |
| Affective Involvement | 0.233 | 0.048* |
| Behavioral Control | 0.279 | 0.017* |
| General Functioning | 0.048 | 0.689 |

Pearson correlation analysis, * $p < 0.050$, DERS: Difficulties in Emotion Regulation Scale of mothers CASI: Child Anxiety Sensitivity Index, Conners' teacher and parent rating scales, FAD: The McMaster Family Assessment Device

impulsivity, ED, and ADHD [28]. ADHD and ED are associated with risky behaviors such as substance abuse and risky sex [18]. Therefore, they all cause high prevalence or degree of social impairment.

Our results showed that 26.4% of mothers have a personality disorder according to the SCID-II. Unexpectedly, there were no mothers with borderline personality disorder (BPD) in our clinical sample. The highest rates were avoidant (8.3%),

Table 1. Correlations between subscales of Difficulties in Emotion Regulation Scale of Mothers and Subscales of Conners and The McMaster Family Assessment Device

| | | DERS Total Score | Awareness | Clarity | Nonacceptance | Strategy | Impulse | Goal |
|--|---|------------------|-----------|---------|---------------|----------|---------|--------|
| Conners' scale | | | | | | | | |
| Conduct Problems Score | r | 0.173 | -0.026 | 0.047 | 0.199 | 0.086 | 0.097 | 0.127 |
| | p | 0.145 | 0.829 | 0.697 | 0.094 | 0.474 | 0.418 | 0.289 |
| Impulsive / hyperactive behavior score | r | 0.159 | -0.016 | 0.013 | 0.148 | 0.121 | 0.188 | 0.215 |
| | p | 0.181 | 0.894 | 0.911 | 0.214 | 0.312 | 0.115 | 0.069 |
| Learning problems score | r | 0.279 | 0.085 | -0.021 | 0.137 | 0.160 | 0.094 | 0.144 |
| | p | 0.018* | 0.479 | 0.862 | 0.252 | 0.178 | 0.434 | 0.226 |
| Total | r | 0.269 | 0.103 | 0.078 | 0.158 | 0.114 | 0.182 | 0.207 |
| | P | 0.022* | 0.391 | 0.516 | 0.186 | 0.340 | 0.126 | 0.081 |
| Mc Master (FAD) | | | | | | | | |
| Problem solving | r | -0.117 | -0.350 | -0.164 | -0.099 | -0.113 | -0.195 | -0.137 |
| | p | 0.326 | 0.003* | 0.169 | 0.407 | 0.343 | 0.101 | 0.251 |
| Communication | r | -0.018 | -0.310 | -0.079 | 0.038 | 0.008 | 0.027 | -0.015 |
| | p | 0.880 | 0.008* | 0.509 | 0.749 | 0.950 | 0.819 | 0.902 |
| Roles | r | 0.115 | -0.099 | 0.046 | 0.009 | 0.015 | 0.049 | 0.034 |
| | p | 0.335 | 0.408 | 0.699 | 0.940 | 0.903 | 0.680 | 0.778 |
| Affective responsiveness | r | 0.226 | 0.089 | 0.188 | 0.246 | 0.128 | 0.168 | 0.066 |
| | p | 0.057 | 0.455 | 0.113 | 0.037* | 0.285 | 0.157 | 0.581 |
| Affective involvement | r | 0.157 | -0.058 | 0.225 | 0.213 | 0.063 | 0.172 | 0.111 |
| | p | 0.188 | 0.627 | 0.057 | 0.073 | 0.597 | 0.148 | 0.354 |
| Behavioral control | r | 0.241 | 0.059 | 0.242 | 0.310 | 0.181 | 0.207 | 0.136 |
| | p | 0.041* | 0.621 | 0.040* | 0.008* | 0.128 | 0.081 | 0.256 |
| General functioning | r | 0.050 | -0.216 | -0.012 | 0.125 | -0.032 | 0.051 | -0.006 |
| | P | 0.677 | 0.068 | 0.918 | 0.294 | 0.792 | 0.673 | 0.962 |

Pearson correlation analysis, *p<0.05, DERS: Difficulties in Emotion Regulation Scale of mothers, Conners' teacher and parent rating scales, FAD: The McMaster Family Assessment Device

histrionic (5.6%), and obsessive-compulsive (5.6%) personality disorders. Study results differ in the literature from Turkey. High rates of obsessive-compulsive personality disorder (23.7%) and histrionic personality disorder (11.9%) were found in a recent study [19]. But some data show no difference in the prevalence of personality disorders in mothers of children with ADHD and those without. It is hypothesized that patients with borderline personality disorder are emotionally hyperresponsive. On the contrary, a study using the International Affective Picture System showed that patients with BPD showed lower scores on arousal than cluster-C personality disorder patients [20]. Thus, ED may accompany many different personality disorders. Cluster-C personality disorders were frequent in our sample as well.

Mothers with personality disorders have more extreme emotion dysregulation problems. They scored higher in both the total and subscales of DERS. This was an expected result for us. Emotion regulation difficulties were found to be higher in mothers of children with ADHD compared to healthy children in the study. Mothers of children with ADHD had higher scores in goals, impulsivity, strategies and nonacceptance subscales of DERS compared to controls.

No difference was found in FAD scales between mothers with SCID-II diagnoses and those without. The structural and organizational characteristics of the families were similar. We anticipated more problematic family functioning in mothers with personality disorders. As a result, we explored the relationship

between mothers' ED and family functions and discovered a relationship between mothers' ED and behavior control. High ED of mothers has a negative effect on standard-setting and discipline in behaviors of all family members. Mother's emotion clarity and emotion nonacceptance contribute to effective behavior control. Difficulties related to a lack of clarity about what emotion is being experienced and a lack of acceptance of negative emotions have an unfavorable impact on mothers' behavior control. Mother's emotion nonacceptance is related to mothers' affective responsiveness. Affective responsiveness is the ability of the family to respond to a stimulus with appropriate feelings because the mother is not open to her own negative emotions.

In addition, mother's emotional awareness is related to communication and problem-solving. Active and successful problem-solving helps conserve family functioning and integrity. Problem-solving and communication are conceptually subdivided into instrumental and affective types. Thus, emotional awareness may have an effect on this affective division.

Unhealthy interactions between mothers and children with ADHD increase psychosocial troubles in these families. Mothers normally have an executive and coordinator role in the lives of children with ADHD. The use of maladaptive emotion regulation strategies by mothers of children with ADHD leads to inappropriate parenting manners. Cognitive strategies such as acceptance, distraction, problem-solving, and reappraisal are

more effective than others in regulating emotions [21]. As mentioned above, most of the studies on ED and personality disorders were carried out with borderline individuals. Borderline-personality-disorder patients indeed engage in more maladaptive cognitive emotion-regulation strategies, such as thought suppression and rumination, and show fewer adaptive strategies, such as cognitive reappraisal or acceptance, compared to healthy individuals [22]. In the next stages, authors evaluated ED in patients with ADHD and borderline personality disorders. Studies have shown that ED in ADHD is similar to the nature of ED found in borderline personality disorder, comprising increased instability and intensity of negative emotions and a slow return to emotional baseline when activated [23]. Some results suggest that there may be similarly inefficient cognitive emotional-regulation skills leading to ED in both ADHD and BPD. ADHD patients showed a higher use of adaptive cognitive emotional strategies and a lower level of ED than borderline personality disorder patients. Like personality disorders, ADHD is associated with higher rates of parental psychopathology [5]. Although personality disorder is the basis for ED, psychosocial difficulties and stress associated with a child with ADHD accumulate as factors affecting the mother's life. Conflicts between a mother and a child with ADHD increase the occurrence of psychopathologies in the mother. Feeling of guilt in mothers about a presumed genetic origin of ADHD is minimized [24]. The relationship between a mother and a child with ADHD may influence the emotional regulation of children with ADHD.

Conclusion

Abuse, neglect, violence, and various forms of exposure to traumatic experiences have been recognized as potential socially related problems of ADHD. When we evaluated anxiety sensitivity in children with ADHD, we found higher CASI scales in ADHD children of mothers with personality disorders. However, a number of questions remain unaddressed about the link between ADHD and ED. Our study contributes to the understanding of the role of mother's personality in relation to ED in a sample. The study was limited by small sample size, cross-sectional design, monocentric origin, not evaluating mothers with SCID-I, and not evaluating ED in children with ADHD. The results of this study, which examined ED in mothers of children with ADHD, may contribute to the creation of effective educational programs for families with neuropsychiatric diseases in order to maintain well-being and functionality.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Funding: None

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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How to cite this article:

Melek Gözde Luş, Meliha Zengin Erođlu. Emotional dysregulation in mothers of children with attention deficit and hyperactivity disorder. *Ann Clin Anal Med* 2021;12(Suppl 1): S72-76